

Appl. No. 10/530,096



PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group
Art Unit: 1712

Attorney
Docket No.: 121036-0078

Applicants: Masashi KUDO et al.

Invention: SEALING MATERIAL

Serial No: 10/530,096

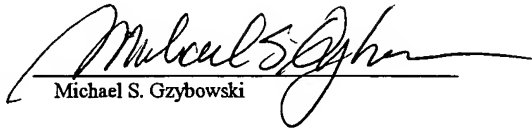
Filing Date: April 1, 2005

Examiner: Kuo Liang Peng

Certificate Under 37 CFR 1.8(a)

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on July 15, 2008


Michael S. Gzybowski

BRIEF ON APPEAL

Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Further to Appellants' Notice of Appeal filed March 31, 2008, Appellants submit the present Brief on Appeal.

REAL PARTY IN INTEREST

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Appellants have assigned this application to both NOK CORPORATION and KANEKA CORPORATION in an assignment which was recorded in the U.S. Patent and Trademark Office on April 1, 2005 at Reel No. 016930 and Frame No. 0159.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences

STATUS OF CLAIMS

Claims 2-10, 15-18, 32 and 34 are pending in this application. Claims 15-18, 32 and 34 stand under Final Rejection, from which rejection of claims 15-18, 32 and 34 this appeal is taken. Claims 2-10 are withdrawn. Claims 1, 11-14, 19-31 and 33 were canceled during the prosecution.

STATUS OF AMENDMENTS

No Amendment After Final was.

SUMMARY OF CLAIMED SUBJECT MATTER

As set forth in independent claim 15, the present invention is directed to a sealing material in combination with an automobile wire harness (See discussion at page 4, line 16 through page 5, line 6 of Appellants' specification) wherein the sealing material seals the automobile wire harness and comprises a cured product of a composition comprising (A) an acrylic polymer having at least one

alkenyl group capable of undergoing hydrosilylation reaction, (B) a hydrosilyl group-containing compound and (C) a hydrosilylation catalyst as essential components (See page 9, lines 14-18 of Appellants' specification).

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

Whether claim 34 is properly rejected under 35 U.S.C. §112, second paragraph as being indefinite.

Whether claims 15-19 and 34 are properly rejected under 35 U.S.C. §103(a) as being unpatentable over Bentz in view of Masayuki et al.

ARGUMENT

Rejection of claim 34 rejected under 35 U.S.C. §112,
second paragraph as being indefinite.

The Examiner has taken the position that the terms "tight" and "low" in claim 34 render claim 34 indefinite on the basis that "it is not clear as to how tight/low the terms 'tight' and 'low' refer to."

Claim 34 reads in part:

"... the cured product of the composition has a tight adhesiveness to electrical wires, a low hardness, and a low insertion resistance to electrical wires."

It is noted that the “tight adhesive test” used according to the present invention is fully disclosed on page 32 of Appellants’ original specification, together with evaluation ratings.

Further, the test for hardness is fully disclosed in the paragraph bridging pages 36-37 of Appellants’ original specification with ranges of preferred hardness identified.

Reference to “low insertion resistance” is found on page 5, lines 3-4 of Appellants’ specification and is believed to be understood by those skilled in the art, particularly in view of Appellants’ discussion of the possibility of damage, e.g. scratches, that can occur during wire insertion. That is, the degree of insertion resistance should be low enough to prevent damage to wires during wire insertion.

It is believed that the limitations of claim 34, when read in light of Appellants’ specification, would convey to those skilled in the art a sufficient understanding of Appellants’ invention.

Rejection of claims 15-19 and 34 under 35 U.S.C. §103(a)
as being unpatentable over Bentz in view of Masayuki et al.

The Examiner has relied upon Bentz et al. as disclosing:

...an automobiles wire harness sealed by a sealing material to avoid the damages resulting from **vibration**, etc. (col. 1, line 12 to col. 2, line 25 and Figures).

The Examiner concedes that:

Bentz is silent on the use of the specific material set forth in the present invention for the seal.

Accordingly, the Examiner has relied upon Masayuki et al. as teaching:

...a sealing material comprising A) an acrylic polymer containing at least one alkenyl group, B) a hydrosilyl group-containing compound and a hydrosilylation catalyst ([0005], [0078], [0086] and Examples) Component A) can be derived from ethyl acrylate, n-butyl acrylate, 2-methoxyethyl acrylate and 1,7-octadiene. ([0008], [0032] and Examples) The molecular weight distribution of Component A0 can be 1.8 or less. ([0010]) The molecular weight of Component A0 is described in [0011]. The hardness of the cured composition is exemplified in [0094]. A filler can be used. ([0081]).

In combining the teachings of Bentz et al. and Masayuki et al. the Examiner has taken the position that:

Since JP225's material is substantially the same as that of Applicants', both should possess the same properties including compression set, loss tangent, etc. JP255's sealing material has a vibration absorption capacity for using in automobiles. ([0086]) The motivation of using the sealing material is to dampen the vibration. In light of the benefit mentioned, it would have been obvious....to utilize JP255's sealing material for Bentz's wire harness seal material with expected success.

Bentz teaches the use of a sealing medium that is necessarily applied as a liquid adhesive to cover and seal the electrical connection where the wires of the wire harness 60 and contact pins are connected for a "edge connector" (Figs. 1 and 2) and a "plug-in connector" (Fig. 3).

The sealing medium is used to form a "seal" that ensures the connection between the contact pins and the wires of the wire harness.

As shown in each of the embodiments in Figs. 1-3 of Bentz (where reference numeral 20 is a substrate; reference numeral 21 is a pressed-in post block – Fig. 3; reference numeral 60 is a wire harness; reference numeral 70 is the seal medium):

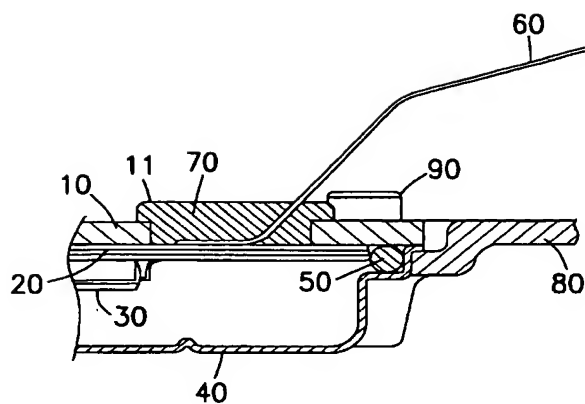


Fig. 1

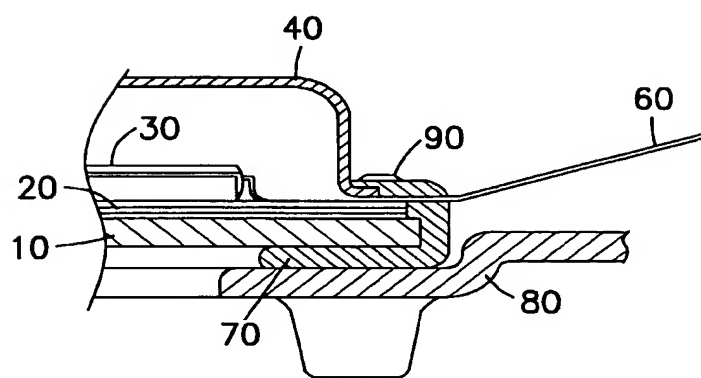


Fig. 2

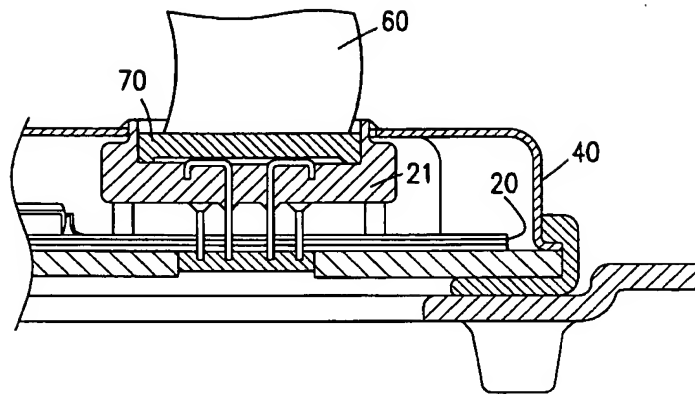


Fig. 3

Bentz teaches “[d]irect connection between the connecting wires of the wiring harness and the electrical connection elements” and that the “connection elements on substrate 20 are, for example, solder terminals which constitute contact points, for example, for punch soldering to the wiring harness.” (Figs. 1 and 2). In Fig. 3 Bentz teaches that it is possible “to connect the connecting wires of wiring harness 60 in electrically conductive fashion not directly to connection elements on the surface of substrate 20, but rather via a soldered-in or pressed.”

As seen in Figs. 1-3, the connection between the wire harness and elements on the substrate are sealed or potted by the seal medium 70.

As argued in Appellants’ amendment filed October 3, 2007, Bentz et al. actually teaches an “arrangement” for mounting a wiring harness on a support plate.

As stated at column 1, lines 44-52:

Direct connection between the connecting wires of the wiring harness and the electrical connection elements of the substrate, and embedding of at least a portion of the wiring harness into a sealing medium which encloses the connection, has the

particular advantage of making possible long-lived, corrosion-resistant mounting of the wiring harness to the substrate. In particular, with this arrangement, no contact break can occur due to vibration or the like.

As can be seen the “arrangement” that primarily makes possible “long-lived, corrosion-resistant mounting of the wiring harness to the substrate” and also prevents breakage from occurring due to vibration, involves structural features such as “[d]irect connection between the connecting wires of the wiring harness and the electrical connection elements of the substrate.”

This structural “arrangement” is to be compared to the prior art disclosed by Bentz at column 1, lines 17-24 in which “edge connectors” were utilized – as opposed to direct connection with the connecting wires of the wiring harness.

As can be seen from the above and Figs. 1-3, the contact elements in Bentz are not separate elements from Bentz’s “entire arrangement.”

Accordingly, vibration at the “entire arrangement” is directly transmitted to the contact elements so that vibration at the contact elements is not diminished by a vibration absorber, because there is no provision of a vibration absorber between the “entire arrangement” and the contact elements.

In Bentz a “break in contact” occurs when an “edge connection” or a “plug-in connection” is used and fails under a vibration condition (See column 1, lines 11-29).

According to the invention in Bentz, the susceptibility to experiencing a “break in contact” is prevented by providing a “fluid form sealing medium” and enclosing and sealing the electrical connection portion in the sealing medium.

In the resulting structure “edge connector” or the “plug-in connector” is locked in an unmovable condition by the presence of the “fluid form sealing medium,” so that the “edge connector” or the “plug-in connector” can not be separated from the electrical connection.

In contrast, the present invention relates to a “solid” wire harness sealing element, and not a “liquid” type adhesive that is utilized for sealing an “edge connector” or “plug-in connector” as taught by Bentz.

Note, Appellants specifically disclose and claim wire insertion resistance characteristics for their “cured product” of the sealing material.

Because the sealing material used in the present invention is a solid, it cannot be used in the application taught by Bentz, simply because it cannot flow into the portions/areas required to be sealed by Bentz.

It is noted that that wire harness seal material of the present invention is, as seen from claims 15, 17 and 34, a cured product. Therefore, the sealing material of the present invention is a solid material that is used in conjunction with a wire harness.

The purpose of the wire harness seal of the present invention is to seal the wire harness itself.

Therefore, if there occurs any defects in the seal or wire harness, these parts can be replaced with new parts because there is no strong adhesion between these parts due to the solid nature of the wire harness seal and the solid-solid contact between the seal and wire harness.

In contrast, Bentz discloses a “sealing adhesive which is usually processed in “liquid form.” (See column 2, lines 4-6). If there are any defects in the seal or wire harness in Bentz, the “entire

arrangement” including the wire harness needs to be discarded because they are strongly adhered together by such adhesives as polyurethane and cannot be easily separated.

Bentz teaches that the sealing materials “can be composed, for example, of polyurethane or silicone or the like.” The polyurethane or silicone of Bentz are materials that are known for use as corrosion-resistant sealing materials – as expressly noted and required by Bentz.

Masayuki et al. teaches a curable composition that can be used as a vibration absorbing material for automobiles.

However, in paragraph [0086] Masayuki et al. only teach that:

...the composition can be used as automobile body parts such as airtight sealing materials, glass vibration controlling materials, vibration absorbing materials, especially for window seal gaskets and door glass gaskets. The composition can also be used as parts for chassis such as vibration- or sound-absorbing rubber for engines and suspensions, especially for engine mount rubber.

It is important to note that e Masayuki et al. begins paragraph [0086] stating:

A Plastic solid acquired from a hardenability constituent for shaping of this invention can be widely used centering on a gasket and packing as a Plastic solid in which rubber elasticity is shown. *For example,...*

What follows in paragraph [0086] are examples of the “gasket and packing” recited in the preamble to paragraph [0086].

Thus the various exemplarily uses or applications involve the use of gaskets or packing.

Further it is noted that in paragraph [0086] Masayuki et al. teaches “vibration isolation material of glass” and “vibroisolating material of a body part” and a “engine mount rubber for vibration proof and noise control.”

In each instance, Masayuki et al. refers to the use of a solid, cured molded article that is provided between two structural mechanical articles which would experience (or transmit) mechanical vibration therebetween, absent the interposed solid, cured molded article.

Such a teaching is not at all applicably to Bentz for the reasons set forth above.

It is further noted that there is no description or mention in Masayuki et al. as using the composition in conjunction with wire harness seals. Rather Masayuki et al. discloses the sealing composition is used in a cured, molded solid form in each of the mentioned applications, e.g. window seal gaskets, door glass gaskets, engine mounts, etc.

Moreover, the material of Masayuki et al. is taught as being a “plastic solid.”

For the reasons discussed above the cured, molded solid seals of Masayuki et al. would prohibit it from being substituted for the “fluid form sealing medium” of Bentz.

Thus, the combination of Bentz and Masayuki et al. finds no particular support in the teachings of these references, inasmuch as Bentz teaches a “fluid form sealing medium exemplified by polyurethane or silicone and Masayuki et al. teaches cured, molded, solid seal elements and does not teach application of the disclosed compositions for use with wire harnesses.

In contrast to the prior art of record, during the course of the present invention, Appellants discovered that the claimed compositions provides excellent adhesiveness to wire harnesses (not taught or suggested by Masayuki et al.), with low out gassing and excellent compressive set characteristics.

On page 4, line 5 from the bottom through page 5, line 10 Appellants teach:

Particularly the sealing material for automobile wire harnesses requires the following characteristics.

- (a) Good heat resistance and ozone resistance corresponding to the automobile using circumstances,
- (b) Distinguished compression set characteristics governing a sealability,
- (c) Distinguished tight adhesiveness to electric wires,
- (d) Less insertion resistance at the time of electric wire insertion and low hardness, and
- (e) No occurrence of cracks on the seals even if the seals are damaged at the time of electric wire insertion.

Most, if not all, of these characteristics are unexpected over the combination of Bentz and Masayuki et al.

CONCLUSION

For the reasons advanced above, Appellants respectfully contend that the rejection of claim 34 under 35 U.S.C. §112, second paragraph is improper because claim 34 is believed to satisfy the requirements of 35 U.S.C. §112, second paragraph.

Further for the reasons advanced above, Appellants respectfully contend that the rejection of claims 15-19 and 34 under 35 U.S.C. §103(a) as being unpatentable over Bentz in view of Masayuki et al. is improper because the Examiner has not met the burden of establishing a prima facie case of obviousness of Appellants' claimed invention.

Reversal of the outstanding rejections on appeal is respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Michael S. Gzybowski", with a long, sweeping horizontal line extending to the right.

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Claim 1 (Cancelled)

Claim 2 (Withdrawn): A sealing material in combination with an automobile engine cam cover wherein the sealing material seals the automobile engine cam cover and comprises a cured product of a composition comprising (A) an acrylic polymer having at least one alkenyl group capable of undergoing hydrosilylation reaction, (B) a hydrosilyl group-containing compound and (C) a hydrosilylation catalyst as essential components.

Claim 3 (Withdrawn): A sealing material according to Claim 2, where a liquid acrylic polymer having a number average molecular weight M_n of 500 or more and a molecular weight distribution (M_w/M_n) of 1.8 or less is used as component (A) of the composition.

Claim 4 (Withdrawn): A sealing material according to Claim 2, where the cured product of the composition has a Duro A hardness of 45 or less.

Claim 5 (Withdrawn): A sealing material according to Claim 2, in combination with a resin-made cam cover.

Claim 6 (Withdrawn): An automobile engine cam cover sealed by a sealing material for cam covers according to Claim 2.

Claim 7 (Withdrawn): A sealing material in combination with an automobile engine oil pan wherein the sealing material seals the automobile engine oil pan and comprises a cured product of a composition comprising (A) an acrylic polymer having at least one alkenyl group capable of undergoing hydrosilylation reaction, (B) a hydrosilyl group-containing compound and (C) a hydrosilylation catalyst as essential components.

Claim 8 (Withdrawn): A sealing material according to Claim 7, wherein a liquid acrylic polymer having a number average molecular weight M_n of 500 or more and a molecular weight distribution (M_w/M_n) of 1.8 or less is used as component (A) of the composition.

Claim 9 (Withdrawn): A sealing material to Claim 7, wherein the cured product of the composition has a Duro A hardness of 45 or less (according to JIS K6253).

Claim 10 (Withdrawn): Automobile engine oil pan sealed by a sealing material for oil pans which comprises a cured product of a composition comprising (A) an acrylic polymer having at least one alkenyl group capable of undergoing hydrosilylation reaction, (B) a hydrosilyl group-containing compound and (C) a hydrosilylation catalyst as essential components.

Claims 11-14 (Cancelled):

Claim 15 A sealing material in combination with an automobile wire harness wherein the sealing material seals the automobile wire harness and comprises a cured product of a composition comprising (A) an acrylic polymer having at least one alkenyl group capable of undergoing hydrosilylation reaction, (B) a hydrosilyl group-containing compound and (C) a hydrosilylation catalyst as essential components.

Claim 16 The combination according to Claim 15, wherein a liquid acrylic polymer having a number average molecular weight M_n of 500 or more and a molecular weight distribution (M_w/M_n) of 1.8 or less is used as component (A) of the composition.

Claim 17 The combination according to Claim 15, wherein the cured product of the composition has a Duro A hardness of 50 or less (according to JIS K6253).

Claim 18 The combination according to Claim 15, wherein not more than 100 parts by weight of a reinforcing agent or a filler is added to the composition on the basis of 100 parts by weight of sum total of components (A), (B) and (C).

Claim 19-31 (Cancelled)

Claim 32 The combination according to Claim 17, wherein not more than 100 parts by weight of a reinforcing agent or a filler is added to the composition on the basis of 100 parts by weight of sum total of components (A), (B) and (C).

Claim 33 (Cancelled)

Claim 34 The combination according to Claim 15, wherein automobile wiring harness is combined with the cured product of the composition and the cured product of the composition has a tight adhesiveness to electrical wires, a low hardness, and a low insertion resistance to electrical wires.

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EVIDENCE APPENDIX

None

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RELATED PROCEEDINGS APPENDIX

None